

to select two pigs, one of each series, grown carcasses having been taken to match the two in respect to size, fatness, habit, etc., as perfectly as possible. All were fasted twenty-four hours as a preliminary to the slaughtering. Each pig having been weighed immediately before slaughtering and after, the difference in the two weighings was taken as the weight of the blood. Immediately after the slaughtering and customary dressing of the pigs, the weights of the thoracic and abdominal viscera and tongues were taken. The carcasses were then hung up until perfectly rigid, when cross-sections of each were made between the sixth and seventh ribs and at the middle point of the lumbar region. These sections were photographed, and thus became the subject of engravings which are shown in the Bulletin.

(Continued on Eighth Page.)



## The Horse.

## CLEVELAND BAY HORSES.

In a recent issue of the *Tasmanian Agriculturalist* is an interesting article from Win. Seath Dixon, of Saltburn-by-the-Sea, an Englishman who appears to be well informed about the origin and history of this breed. As in some respects he differs on these points from many writers in the United States, we append what he says for those interested in a breed which is becoming quite popular in this State.

Cleveland Bays have been increasing in favor in the United States and the Colonies of late years to such an extent that the importing of this valuable breed of horses is now an important branch of the stock trade both in the States and the North American colonies. They find especial favor in the Western States, and occasionally a horse or two have been sent to Australia. A growing trade is also springing up for high-class specimens of the breed in Buenos Ayres. Nor is it difficult to tell the reason of this. The Cleveland Bay is a horse of undoubtedly long pedigree, his elegant outline and great activity are remarkable, and his fine constitution renders him more especially adapted to bear those vicissitudes of climate which are the lot of all exported horses. The origin of the Cleveland Bay, like that of every other breed of domestic animals, is enveloped in obscurity, but the breed has been looked upon as a pure one for a considerable length of time, and that it has existed in something like its present form since the commencement of the last century there can be little doubt, for the tradition has been handed down from father to son for generations, of a race of horses who possessed equally clear of thoroughbred—i. e., racing blood—and carting blood.

That more accurate records of the breed have not been kept is much to be regretted, for until the beginning of the present century little notice was taken of the pedigrees of any horses save those known as thoroughbreds. Indeed, many of the old Cleveland horses were never dignified with a name, and were generally known by the patronymic of their owner. It is also curious to notice that pedigree was seldom, if ever, fully given on the cards and bills of the horses that travelled in the first decade of the present century, and even of horses so highly celebrated as Mr. Masterman's Skyrocket and Forester no record of breeding exists. The value of keeping correct records of pedigree soon began to force itself on breeders of stock, and the publication of Cates's *Herd-book* marks a new departure in the history of our farm stock.

About the middle of the present century, in the north of Yorkshire and the south of Durham, the majority of the farm horses were the Cleveland Bay breed, and this state of things continued until 1873, when the increase of trade caused an increased demand for heavy horses, and attention was drawn, by the action of the Cleveland Horse Society, to the breeding of heavy horses. The subsequent proceedings of the Shire Horse Society, and the success which followed the efforts of these two societies, naturally stimulated the breeding of heavy horses, and tended to discourage the breeding of a class of horses which did not bring the prices that were then prevalent for heavy draught horses. Another reason why the breeding of Cleveland Bays became generally neglected was the eagerness with which the foreigners, especially the Germans, picked up all the good manes they could lay their hands on for the Government studs at prices far in excess of what they would have made at home. Indeed, the greater number of breeders and farmers looked upon the Cleveland Bay as a good old "has been," and various theories were propagated, and several experiments tried aimed at the breeding of the coach-horse of the future, with various results, few of them proving quite satisfactory.

A very short time it began to be recognized, by those who devoted serious thought to the matter, that it was impossible to do without the Cleveland Bay mare for any length of time, and the few mares, who from accident or forethought had kept breeding Cleveland Bays began to have a good time. Then a new market sprang up in the American and Colonial trade, a market that is gradually increasing and developing, and now there is a steadily increasing inquiry on the South American continent and in Africa, as well as occasional exports to the Australian colonies. With this increasing trade—a trade, be it noticed, of a sudden growth, and with the country, at the time the demand arose, to a certain extent depleted of pure-bred animals—it is not to be wondered at that there were found unscrupulous men, both at home and abroad, who sold animals with scarcely a drop of Cleveland blood in their veins, with elaborately constructed pedigrees.

As might have been expected, the produce of these nondescript brutes was disappointing, and seeing that they were furnished with such excellent credentials, it is not to be wondered at that the breed fell somewhat into disrepute with those who were not well acquainted with the genuine article. The tide was indeed beginning to languish a little when the formation of the Cleveland Bay Horse Society, and the issue of carefully authenticated stud-books under its auspices marked a new era in the history of the breed.

And now, to a certain extent, the danger of buying false pedigreed animals is removed; for, armed with the stud-book, and protected as he is by the action of the Cleveland Bay Society, the would-be purchaser runs little risk of disappointment, unless, indeed, he has the not uncommon wish to buy his animals below their value; when, of course, he has only his own greed to blame for any loss he may suffer. The natural result of this necessary protection is an increased confidence on the part of buyers, and, with the numbers of the pure bred growing larger year by year, there has also been a corresponding growth of demand for the best type of animals.

The Cleveland Bay Society draw the lines rather close at the commencement, and it is an open question with some "whether the rules were not too stringent at first. It is, however, better to err on the side of severity than to let matters connected with pedigree records, and more especially in this case with a breed so pronounced in type as the Cleveland Bay. The Cleveland Bays

have much improved during the past two or three years, and the increased care bestowed upon the mating of the mares is apparent at every show where they are exhibited.

A word or two respecting the families into which Clevelandas are divided may prove of interest. The Hob Hill Horse, as he is familiarly called from the place of his owner's residence, stands at the head of one of these. His name was Farmer's Glory, and, strange to say, no pedigree of him exists. He flourished in the early years of the century, and was singularly successful as a sire. Indeed, he was perhaps the sire of more stallions than any of his contemporaries, and it is on record that his owner, Mr. Wetherell, once exhibited him with six of his sons at a stallion show in the neighborhood. Dart is another of the old sires which has made so great an impression on the breed as to be the head of one of the families. He was bred in the East Riding, and there is no reliable pedigree of him in existence. It has been asserted that he has a considerable admixture of thoroughbred blood, but the record of him is very meagre and not very reliable. It is through his great-grandson Rainbow, afterwards known as King George the Fourth, that the most eminent of his descendants spring. This horse was bought by Mr. Robert Thomas, of Eyrholme, near Darlington, for the respectable sum of £300 when he was seventeen years old, and it was Mr. Thomas who changed his name. He was a useful acquisition in his new locality, and, amongst many others, was the sire of King George, whose son, Master George, was one of the most famous sires of his generation, and from whom is descended most of the best horses of the present day.

From Milner's Volunteer, a prize-winner at Howden, in 1806, through his grandson Pomfry's Volunteer, a large number of the modern Clevelandas descend. Pomfry's horse was a frequent prize-winner. He was a good-sized horse, rather light in color, and was not a remarkably fine goer. His progeny have, however, been distinguished by good action.

In the limits of an article like this it would be impossible to enter more fully into the history of the breed or give an elaborate description of its points and construction. This has been done, both in the stud-book, and in the various newspapers and magazines of late, and the subject is familiar to most who are interested in the welfare of the breed. To these it will be a source of satisfaction to know that several gentlemen of means and position in England are using their utmost endeavors to improve the breed, and there is now no doubt whatever amongst practical men that the Cleveland Bay holds the place of pride as the general utility horse.

## Do Not Know of Such a Law.

LAPEER, June 18, 1889.  
To the Editor of the Michigan Farmer.

I see in your issue of Dec. 29, 1888, you gave the law relative to the collection of stallion fees. Now will you please give, for the benefit of Michigan farmers, the law if there be any, in regard to accidents through carelessness or otherwise, while in the act or attempt of service. Such accidents as kicking by either the mare or horse. Information on this subject will be gladly received by a reader of your valuable paper.

SUBSCRIBER.

## Horse Gossip.

DONOVAN, the winner of the English Derby, has also captured the Prince of Wales Stakes, Great Britain.

R. P. NAVARRE, of Newport, this State, has purchased from John Steinman, of Toledo, Ohio, for \$500, the pacer Alerick.

HANOVER must be getting into good form again. It won a dash of a mile and a half over the Sheepshead Bay track in 1:55 on Friday last week.

The fast race mare Valuable, by Ten Broek, dam Lizzie Stone, by Enquirer, has broken down. She was to be started to beat her sire's time for a mile—1:39½—the best on record. She had been sold a short time previously for \$5,000.

AND NOW it turns out that those South-Americans only paid \$17,000 for the gelding Prince Wilkes, not \$30,000 as the owner gave out to the public. It is a good thing for its reputation that George Washington never owned a trotter.

THE HORSE AL FARTOW, who has beaten the world's time in a running race, and his losses, C. V. Tupper, have been expelled from the California Blood Horse Association race privileges on account of the horse being held back in a race recently.

EX-GOV. ALGER has purchased from W. S. McNaughton, of Minneapolis, Minn., the bay gelding William C. 2:23½, by Young Wilkes 951, dam by Long Island, son of Napoleon, for \$4,000. He will be driven on the road to pole with the Governor's \$4,500 roadster.

GEN. WM. T. WITHERS, of Kentucky, the great breeder of trotting horses, died on Sunday last. He was the owner of Almont, Harry Medium and Aberdeen. He made it a rule never to race his horses, nor would he trade one. In the 18 years he was breeding his sales amounted to \$750,000.

MR. J. COXEY, of Massillon, Ohio, is said to have paid R. P. Pepper, of Kentucky, \$40,000 for the five-year-old stallion Acolyte 7413. He was raised by Onward 1411, dam Lady Alice, by Almont 83; 24 dam, Lady Mambrino, by Mambrino Chief 11; 24 dam, by Grey Eagle (thoroughbred). This is fine breeding—but \$40,000! Can't you come off a thousand or two to the statement will have more believers?

THE RACE for the Grand Prix de Paris, the principal event on the French turf, was run on June 16th. There were 13 starters, and the race was won by an outsider whose chances were considered so poor that 50 to one was offered against him. The winner was the bay colt Vasilias, by a length, Pourtaut, a 39 to one chance, was second, Maypole, one of the favorites, third, and Kagan fourth. The betting was heavy.

RACELAND, owned by August Belmont, won the Suburban Handicap on Tuesday last, over the Sheepshead Bay track, and with it the purse of \$7,000 for the winner. Terra Cotta was second and Gorgo third. The winner carried 120 pounds weight, while Rarus had 123 pounds up. The race was a mile and a quarter. The starters were Terra Cotta, Rarus, Raceland, Badge, Rixwood, Bella B., Gorgo, Volunteer 24 and Brian Boru. Race-

land was sired by Imp. Bilet, dam Calomel, and won as a two-year-old over \$15,000 for his owner, Mr. Belmont then purchased him for \$17,500.

In the \$10,000 stallion stakes to be trotted for at Boston, June 23rd, is the only Michigan entry. There are 14 other competitors, among them Edgemark, Viking, Bermuda, Brown, Axtell and Granby. If June-mont can win in such a class as this, and he has a good fighting chance, it will be a big victory, and a great thing for his sire, Tremont. June-mont is now six years old and had a very severe campaign in 1888. If he shows up in good form this season it will stamp him as a great campaigner.

## The Farm.

## CARE HOGS AND POULTRY.

CLEVELAND, June 8, 1889.

To the Editor of the Michigan Farmer.

In answer to "Ditto," in Veterinary Department of to-day's FARMER, I will give my plan of taking care of hogs and poultry, and they are healthy as well as profitable.

I feed my hogs but once a day, just at night, and give them all they will eat up clear; my hens twice a week in the ear, and enough to last until I feed again, and the harder the corn is to shell the better for the hens. Both have water whenever they want it, the hogs given seventy rods for their. Both have the range of the barnyard in winter.

My object is to force exercise. The hens must live to shell the corn. The hogs will not live in the pen all day waiting to be fed, but will travel the yard over and over again eating hay, etc., that they would not touch if fed three times a day.

Nature requires work from all that live by eating. The indolent man is always complaining of his health; but if circumstances compel him to go to work how quick his health and strength are restored? If a moderate amount of labor is necessary for the health and comfort of man, should he not use some judgment in taking care of his stock to keep them healthy? It is invariably the fat horse that dies in his prime; the favorite cow that is over-fed; the what fearful mortality among them they get so fat that they can not stand alone! I will say to "Ditto" it was not that board that hurt his brood sows; it would not have hurt them at all if they had been strong enough to have jumped over a ten rail fence. An ounce of prevention is worth more than a pound of cure.

W.

## Clover as a Fertilizer.

Red clover (*Trifolium Pratense*) belongs to the natural order Leguminosae. It is a native of Europe, where it has been cultivated as a forage plant for two centuries or more. Clover is popularly supposed to derive a part of its nutriment (in the form of nitrogen) from the air; but the conclusions of scientists do not confirm this theory. From carefully conducted experiments it has been found that plants only feed through their roots. It is certain, however, that clover possesses the power to abstract nitrogen from the soil beyond any other forage plant. It is also exceedingly rich in potash and phosphoric acid.

It might be supposed that a crop which draws so heavily upon these important constituents of the soil would exhaust it of plant food. But this does not seem to be the case. On the contrary, land so far from being exhausted by its cultivation, is actually improved; and the heavier the crop taken off the greater and more permanent the amelioration of the soil. This is so contrary to what we might reasonably expect, that it requires explanation.

Clover is a gross feeder. It does not seem particular as to the kind or quality of its food. It also has the capacity of finding and appropriating it when other plants fail to do so. For this purpose its long tap root is admirably adapted. While timely and other grasses feed near the surface, clover sends its long, slender, pointed roots down deep in search for nourishment. On clayey soils it frequently penetrates the subsoil to the depth of three feet. It is provided throughout its entire length with feeding rootlets or sponges, which absorb the nitrogen and other elements from the upper and lower soil. Thus clover does not depend upon the surface soil alone for its nourishment; it also puts the subsoil under contribution. In other words, instead of being subjected to the limitation of other plants, it is free to roam where it will. In this way, for the clover crop the soil is practically trebled in depth. And all this richness brought up from below goes to increase the value of the plant for feeding purposes, or it is left in the form of stubble and fallen leaves to enrich the surface soil.

When clover is plowed in, either before or after a crop has been taken off, the decaying roots make a rich supply of humus or vegetable mold, without which there can be no luxuriant plant growth. They also leave natural water channels for the escape of superfluous moisture. On heavy clays or moist land the benefit of this is very marked, since the soil is left light and porous. The quantity of clover roots that permeate the soil is simply enormous. By actual experiment it has been found that the roots from an acre of clover producing two and a half tons of hay if dry would weigh (in a green state) forty tons, equal to ten or twelve cords. These, like the plants, are rich in nitrogen, potash and phosphoric acid. By plowing the crop in not only is an immense amount of fertilizing material obtained, but the soil is filled with vegetable mold. It is thus put into that light, friable condition so necessary to the luxuriant growth of plants. A clover sod is the ideal seed bed. On it cabbages, potatoes, turnips, strawberries, corn, wheat, oats—in fact, all vegetables, fruits and cereals flourish abundantly. After a heavy growth of clover any crop may be grown successfully, and the improvement in the soil is not for a single year but continues for many years.

The benefits of growing clover both as a forage crop and to plow under are well understood by the farmers of the Middle Atlantic States. In New York, New Jersey and Pennsylvania thousands of acres that were so completely exhausted as to be practically worthless have been made rich and productive again by sowing clover, with a top dressing of guano, superphosphates or ground bone, and plowing the crop under. Sometimes it has been found necessary to repeat the process two or even three times before the land was sufficiently enriched to produce corn and wheat. But when this is accomplished the soil is as "good as new." All the labor required after the fine top dressing is the plowing, harrowing and sowing the seed. Such land, after being reclaimed, is frequently valued at from \$100 to \$200 per acre.

On heavy soils, as we have seen, the benefits of clover are partly mechanical. The roots penetrate deeply and decaying keep the soil light and loose for many years, in this way furnishing simple but effectual drainage. On light soils the effect of the decaying roots is exactly the opposite, that it acts as a mulch to hold the moisture. Thus the effect is something like that of the Irishman's whiskey which cools him in the summer and warms him in the winter.—N. E. Farmer.

## To Get Clover on Light Soils.

Professor Samuel Johnson, of the State Agricultural College, says on this subject:

"The droughts of a few years past have generally destroyed the clover and grass seed sown. The all-absorbing question, on light and sandy lands in particular, is how to secure a good catch of clover. When this can be done, such lands produce well and are classed among our surest and most valuable farming lands. Barnyard manure will be indispensable in putting such wasted soils in condition to grow the clover. Every farmer has doubtless observed in the fields where he has sown clover seed that spots more fertile than the main portions of the field have been covered with a good growth of clover, showing that if the land was thoroughly fertilized the clover would grow whether the season was wet or dry. I should advise keeping all the stock possible on the farm and buying more or less wheat, bran and oil meal to feed the stock, and so increase the value of the manure pile. I should prefer buying commercial foods such as I have named for this work of renovation rather than commercial fertilizers. It might be well to try plowing under green crops, as rye or buckwheat. Sowing the clover seed without any other crop, after the land has been put in good till, either in spring or the last of August, sometimes proves effective. Such lands are not adapted to permanent meadows."

## Alfalfa and Alfalfa Experiments.

Much has been said for and against alfalfa. It is generally known that it is a forage crop quite closely related to red clover, and sometimes called lucerne. It is not a new plant, having been under cultivation for hundreds of years. That it has not grown more rapidly in favor in this country is not altogether easy to explain.

In the last annual report of the New Jersey Experiment Station Dr. Cook, the director, states the following strong points in favor of alfalfa as a forage crop: "(1.) It is fit for soiling purposes as early as the third week in May. (2.) It may be cut three or four times each season. (3.) The second and later growths, if harvested as soon as blossoms appear, make an excellent hay. (4.) When well rooted it successfully resists both drought and frost. (5.) Under favorable conditions it does not 'run out' for many years."

The disadvantages are set down by the same authority in the following words: "(1.) The first growth is fit to cut before the weather is fit for hay-making. If allowed to mature the stems grow woody and are rejected by stock. (2.) Trouble has been experienced in securing a good stand."

It will be seen that there are very strong points in favor of alfalfa, while at the same time the objectionable features are possibly great. It does not matter how much real merit there may be in a crop when well grown, if it is impossible to get a profitable yield. The large amount of fodder upon a given area may be fully offset by the poor quality of the crop. For these reasons, pro and con, for and against, the alfalfa has justly merited the attention it has already received at the New Jersey experiment station and elsewhere. In New Jersey in 1887 ten experiments were made with alfalfa distributed in seven counties. The one upon the college farm was successful, but this was probably due in a large part to the lateness of the sowing and unfavorable weather attending the other nine. This result suggests that the plant is extremely sensitive to conditions when it is making its initial growth from the seed. In the experiment a plot 30 by 150 feet was employed, having a compact clay subsoil and enriched with eighty pounds of a complete fertilizer. One-half was broadcasted at the rate of thirty pounds per acre, while the other half was drilled with half as much seed. The drilled portion was cultivated three times the second season and four cuttings were removed from the whole plot with the following yields, green weight:

June 4, July 5, Aug. 6, Sep. 14, Total  
Tons. Tons. Tons. Tons. Tons.  
Drilled plot .94 4.40 2.10 3. 18.10  
Broadcast plot 9.90 4.40 2.40 4.20 20.90

In October there was a fifth crop which was not cut, but pastured off. It will be seen that the broadcast area gave a larger yield than the drilled and cultivated portion. Samples for each cutting from both portions of the plot were subject to chemical analysis, but no marked differences were found. The broadcast portion was not cut the first year, 1887, while the drilled area yielded crops, so that taking the two years together it is found that the cultivated portion gives the greater returns, and a balance to the credit of the drilled area remains after deducting the expense of the cultivation.

The chemists found the food value of lucerne as compared with clover and timothy hay to be \$20.60 for lucerne, \$14.20 for clover and \$20.40 for timothy. The actual feeding value of each in practice depends upon the proper balancing of the ration. Alfalfa hay is rich in the protein compounds, that is, like the gluten in flour, and needs to be fed with substances low in these expensive compounds, such as corn fodder. It is too rich by itself, while clover hay makes a good ration alone—an important point in favor of alfalfa—or, in the language of the report, "Alfalfa, therefore, furnishes the farmer a feed material rich in protein, which can be substituted for such rich products as wheat bran, cottonseed meal, etc.,

usually bought in order to profitably utilize the excess of carbohydrates."

The total yield upon the cultivated area was, for the two years together, at the rate of \$200, or, in other words, ten tons of dry hay at \$20.00 per ton. If the expression may be permitted, when alfalfa does well it does very well; that is, when it is successful in making a good stand the returns are highly favorable. It remains to be seen what these areas may do in the present season. If alfalfa, once well established, continues to hold its own it will increase the desire to become familiar with the particular conditions that favor it when it is passing the critical period of early growth from the seed. There is still much to be found out about the old forage plant.

## Vitality of Clover Seed.

The question is sometimes asked whether clover seed two years old is good to sow. At this age it will always look somewhat faded; but if it has been properly kept, there need be no fear of every seed growing if given a fair chance. We have seen two-year-old seed scattered accidentally on the snow in early spring, and coming up as thick as the hair on a dog. If left in the ground by being buried too deeply, clover seed will often hold its vitality many years. In localities where clover seed is grown, more or less of the seed is lost in harvesting. If the clover seed stubble is plowed and sown with wheat, that which dropped on the surface will not grow the next spring, as it is buried too deeply. But it will come up in subsequent plowings for many years afterward, showing that this seed has retained its vitality underground in all changes of temperature. Farmers sometimes say of such land that "it is natural to clover," or the clover comes in without seeding." Neither of these phrases is strictly accurate, but the land of which this may be said is always among the best.—American Cultivator.

## Wood Ashes for Potatoes.

At a recent meeting of the Elmira Farmers' Club, Mr. J. W. Hoffman reported that he had just purchased a car load of wood ashes; and then spoke of how they should be applied to land planted with potatoes. He said that if obliged to be sparing in their use he would put them on the hills after planting, but with a liberal supply he would spread them on the entire surface before planting. In applying on hills planted care must be taken to prevent contact with the stalks if up. The object is to feed the roots, so when ashes are placed on the surface dependence is placed on rains to leach them and carry the diluted downward. Working the land incorporates the ashes with the soil, and moisture fits them for use. They will make potatoes smooth, and improve their quality as well as yield. In explaining his purpose Mr. Hoffman said he wanted to use the ashes to get immediate profit, but he had an ulterior object, to bring the land to nursery uses, and he thought ashes on the cultivated crop would help to make strong, hardy growth for the young trees. Another member regarded wood ashes as the very best fertilizer to improve both the yield and quality of potatoes.

## The Strawsoniser.

One Strawson, of England, has invented a machine known as the strawsoniser, which promises to do more things and do them better on the farm than they can be done by any other means of process yet adopted. A stock company of agriculturists has been organized to control and operate it. The Strawsoniser will distribute nitrate of soda, lime and all powdered fertilizers, as well as insecticides and other substances of like nature, with an evenness heretofore unknown, and will also sow broadcast all kinds of seeds and grains, with nearer a thorough and mathematical distribution than it has seemed possible to secure heretofore. It is asserted that it will distribute so small a quantity as a gallon of petroleum over an entire acre in so fine a spray that every inch will be somewhat moistened by it. The same machine, by readjustment, will distribute fertilizers and do all the other work specified above.

A recent experiment at Windsor shows that a fine spray of paraffine was spread over twenty feet as the machine traveled, and every inch of surface was found to be perceptibly moistened. Wheat was distributed with wonderful regularity over a track eighteen feet wide over which the machine traveled, and at this rate it is claimed that thirty to forty acres may be sown in a day. It is run by single horse power and also by hand power. If one half of what is claimed for the machine be true, it is bound to revolutionize many agricultural processes.

## Straight Rail Fence.

A correspondent of the *Country Gentleman* who writes from Indiana, describes a style of rail fence cheaper and more economical than the zigzag sort usually seen. He says: "In this section we build straight rail-fence by setting the posts not less than two feet in the ground and not quite ten feet apart (rails are uniformly ten feet six inches long). We then place a second and smaller post beside it, either in the ordinary way, by sharpening it and driving until it is firm; then wire both posts together, both at top and bottom. By using an extra strand of wire at bottom you can rest the bottom rail on the wire and save 'chinking.' The smallest sized galvanized fencing wire, or a smaller and cheaper wire will answer. I use the wire made for baling hay, simply as I happened to have it on hand, and it is convenient to handle. A pair of pliers or pinchers is necessary for twisting the ends of the wire. The posts are placed far enough apart to allow the rails to be placed between them.

In fence-making I cut the rail timber the right length, then take a team, with chain, and drag the cuts along the line of the proposed fence and make the rails where they are needed, saving loading and unloading the rails, and then you can drag the cuts where it would not be possible to drive a wagon. There are several kinds of timber suitable for posts, that are not much use for anything else, such as sassafras, mulberry, etc.; they make better and more durable posts than oak. My experience is that posts made when the sap is down is much more lasting than when made at any other time. A straight rail-fence, six rails

high, is equal in height to an eight-rail crooked fence, from the fact that the rails lie upon the edge in the former and flat upon the latter. The legislature of our State recognizes this fact, and a six-rail straight fence is legal, whereas a crooked rail-fence must be eight rails high.

## The Value of Fertilizing Materials Used in England.

M. Hermann Voss, general manager for the important company, "The Anglo-Continental Guano Works," gives the following estimate in francs of the fertilizers employed in England:

Phosphate.....	1863-65.....	1866-57.....
Guano.....	3,750,000.....	16,250,000.....
Guano.....	15,000,000.....	12,500,000.....
Guano.....	50,000,000.....	12,500,000.....
Nitrate.....	12,500,000.....	18,750,000.....
Potash salts.....	500,000.....	3,000,000.....
Pyrites employed in the manufacture of acid for the preparation of superphosphate.....	7,500,000.....	13,750,000.....
Total.....	89,250,000.....	76,750,000.....

The value is greater in 1863 than in 1887, and yet the consumption has greatly increased. This anomaly is explained by the fact that the price of fertilizers has diminished very much during the intervening period. The important lesson for us to remember from these numbers of M. Hermann Voss is, that in 1863 when our agriculturists in France scarcely knew of artificial manures, they were employed to the value of almost 90 million francs in England; and further, that the total area of cultivated land in England is not one-half of that in France—10 million hectares in England, compared with 25 millions in France.

How can we be any longer astonished at the different yields obtained in the two countries, and the superior state of English agriculture? To return to our main question, however, we must add to the above list the value of other materials currently consumed by the agriculture of England:

Suphate of ammonia, 36,000 tons at 300 francs.....	10,800,000.....
Fish guano, 5,000 tons at 300 francs.....	1,500,000.....
Dried blood, 3,000 tons at 300 francs.....	900,000.....
Leather, horn, and various waste materials.....	2,000,000.....
Total.....	14,200,000.....

## Agricultural Items.

EXPERIMENTS by the New York Dairy Commission show that oleomargarine will not dissolve and digest in the human stomach in its natural and ordinary temperature, and it is, therefore, an unprofitable substance for food.

CAROLINE 24 219, A. J. C. C., twenty years old, and owned by F. D. Curtis, of Charlton, N. Y., has had 18 calves, and goes by the name of "Grandmother" at Kirby Home-stead. Some of the calves were sold at \$500 and \$800 when the Jersey boom was on.

A NEW YORK farmer says peas are the most valuable food for hogs that he can raise on his farm. He makes successive sowings so as to have a supply through the season. And the pea straw he recommends as an excellent food for sheep. After the peas are off the land, he sows turnips.

MASSACHUSETTS has 60 farmers' clubs, with a membership of 6,000; and 125 farmers' institutes were held in the State last year. The cultivated land in the State produced \$47,756,033 worth of agricultural products, the average being \$50 per acre. Five million dollars' worth of vegetables were raised.

SEVERAL years ago a farmer reported to the *Husbandman* his success in exterminating a patch of live-forever by introducing plants of the live-forever which were affected by some disease peculiar to it. Otherwise, so remedied the laborious one of digging or plowing it out and raking and burning root and branch has been discovered.

N. J. NATHAN & Co., manufacturers of oleomargarine at Jersey City, have gone out of the business of manufacturing bogus butter. They would have paid \$480 to continue business, under the law requiring a government license; and it will cost them \$800 to settle the cases brought against them for violation of the law relative to sales. The firm will engage in the yeast business.

At the Paris Exposition, the carriage exhibits of two New York and Chicago firms caused much wonderment. The light hickory wheels astonished Europeans accustomed to heavy tires, and spokes and hubs which we would scarce, ly put under lumber-wagons. But it is the bugbys that cause foreigners to open their eyes wide. These vehicles are unknown in Europe. Why did not somebody send a buckboard? It would have caused another "C'est drôle ça!"

A DAIRYMAN engaged in the retail milk business says he has found by actual experiment, a difference of 44 to 18 per cent between the percentage of cream from milk first taken out of a thirty-quart can and that taken out last. Those who required the milk from the bottom of the can got that which was in effect partially skimmed. To obviate this he took to delivering bottled milk. The disadvantages in this system are all on the seller's side.

T. B. TERRY says: Cut your clover when in full bloom, if you want the choicest hay. This is vastly more important than the saving of every individual leaf when you are handling it. If cut when half the blossoms are tressed it will cure much easier, but the value will be decidedly injured. I do not say this from analysis, but from long experience in feeding. Those who leave their clover until nearly all the heads are brown simply ruin it, and I do not wonder that they sneer at the idealist I keep my work horses on clover hay without grain, year after year.

An Illinois correspondent of the *Country Gentleman* relates a singular experience, as follows: A neighbor who put up this year a string of all wire fence, had an experience that others should be warned of, that they may avoid it. His posts being from young timber and unburnt (it is not necessary to how posts, only chip away the sapwood to receive the staples) were round. The wires were properly stretched, and of course all stapled on one side. Their tension turned the posts around until the wires were placed and the brace thrown off one end of post. The remedy is to have at least six posts at each end and not round.

FOR A DISORDERED LIVER try BRYAN'S PILLS.

# Take Hood's Sarsaparilla 100 bottles One Dollar

The Chief Reason for the great success of Hood's Sarsaparilla is found in the article itself. It is merit that wins, and the fact that Hood's Sarsaparilla actually accomplishes what is claimed for it, is what has given to this medicine a popularity and sale greater than that of any other sarsaparilla. We will first give you a list of the build our business naturally and we have purchased the benefit of and observation. After deciding to lay down a plan of action, and cherry stone price the largest, crowning member of the roots in our vigorous state, which for some time have been well taken up bodies, with it. And the same they must be. In making a list, it is always the kind who own locality, clearly well paid, advice of soul, trust very far, while they are, the red raspberries, a young plant, caps should be growth plants, they make making than they. In making a list, it is always the kind who own locality, clearly well paid, advice of soul, trust very far, while they are, the red raspberries, a young plant, caps should be growth plants, they make making than they.



## Horticultural.

For the Michigan Farmer.  
WEST MICHIGAN FRUIT-GROWERS' SOCIETY.

(Continued from last week.)

FRIDAY MORNING.

Mr. R. Mill read a paper on "Nursery Stock and Tree Agents," which we give in full:

As commercial fruit growing becomes a prominent industry in any locality, it becomes the victim of a variety of frauds and swindles, which are being yearly perpetrated on our farmers, and the fact that they are generally and successfully worked seems to call for their consideration before this Society.

Among those which seem to demand our special attention are certain frauds as well as some honest mistakes made by nurserymen, and that price among highwaymen, the traveling tree peddler. And perhaps we should include the traveling grower, whose work does not extend beyond the apple; but as a fraud in his line he is sometimes a great success.

We will first consider nursery stock, as it is one of the foundation rocks on which we build our business, and the great questions naturally arise, What shall we purchase? How shall we purchase? And of whom shall we purchase? In these matters we will give the benefit of a fair amount of experience and observation.

After deciding what we will plant let us lay down a rule, that in apple, pear, plum and cherry stock, we will not accept at any price the largest stock offered, nor yet the smallest, checked or culled stock, but rather, remembering that in the largest stock we lose the roots most essential to give the tree a vigorous start, and in culls we get a tree which for some reason is stunted, and probably will never fully recover; but rather insist on having nothing but first class two year old stock, with plenty of good roots well taken up and cared for; smooth straight bodies, with wood free from discoloration. And the same rule for peach trees, except they must be one year old stock from bud; in the grape a strong two year old is about right; in blackberries one year plants from root cuttings are best, in current and gooseberries one year old stock, if well grown, will do as well as two years stocks and cost less. In the red raspberry perhaps such plants from a young plantation are the best, and blackcaps should be propagated from two years growth plantations. As for strawberries, they make much better plants before fruiting than they ever do after.

In making selection of varieties for market, it is always best to confine ourselves to the kinds which have been successful in your own locality, in which, if you are not sufficiently well posted, you can usually get the advice of some neighbor who is; but never trust very far to catalogue descriptions, as while they may be ever so accurate in a locality hundreds of miles from you, they may disappoint you. Never trust to the tree agent, with his deceptive colored plates, unless you are willing to acknowledge that he knows more about your business than you do yourself. I would always advise fruit-growers to secure a few plants or trees of any promising new variety in which you are interested, and plant them as a matter of information by comparison, and we will find occasionally a good thing among them; but unless you are of the speculative class do not purchase new and untried things in large quantities.

The question of how we shall purchase is governed to a large extent by circumstances, but generally we would urge the purchase of all stock in the fall except black raspberry and strawberry plants, heading them in properly on your own place in some dry and sheltered location, as we nearly always have more time and money in the fall—the weather is better for handling stock, and the stock bears handling much better, and we always have a better stock to select from. Then when the hours of spring work are on, we do not have to break off to get our stock, or be delayed for weeks waiting for eastern stock, only to find, when it arrives, that it is in a half ruined condition, and it is very discouraging, but are of yearly occurrence.

It possible we would always inspect stock before purchasing, especially in the tree fruit, and purchase of the growers only, and if possible of some honest, local nurseryman, if you are fortunate enough to have one in your vicinity. Always remember that if your nurseryman has any stock that he is not proud of, if he sells it at two or three prices, claiming to represent some well known nursery. If you cannot get what you want near home, the best plan is to get a catalogue of a few of the most reliable, large nurseries, and after selecting what you need, if a large quantity, write them giving your list, and describing what you expect, asking for their best prices and positively forbidding substitution; but do not expect any reputable man to sell you such stock for less than it is worth. Bear in mind there is danger ahead when you commence to hunt for the cheapest man; and if you purchase on that plan and find in after years that you have lost dollars for cents saved in the purchase, please remember that the blame rests entirely with yourself. If I was about to purchase a large bill of trees of any eastern nursery, I should buy say half a dozen trees with the understanding that they should be a sample lot, and order from them by following the above rules, one should be able to purchase stock that is nearly perfect, get it in good season, and at a fair price.

As to whom we shall purchase the stock at that will depend on circumstances. In any case buy of the man who has the best stock convenient to you, if he is an honest, reliable man; if not, have nothing whatever to do with him at any price no matter how good his stock, as the temptation is too strong for such a man to fill your bill, whether he actually has the varieties you want or not. Our next choice would be to deal with some of the large nurserymen who have a good reputation and enough good business sense to maintain it—always forbidding substitution.

Our next topic, I believe, is the tree agent. There are several grades of them, ranging from the reliable citizen who is taking orders for some reliable nursery at living prices, to the highwayman who travels up and down seeking whom he may rob by selling their worthless stock at large figures. He is the best supplied man in the business, he can supply you with anything you want, and many things you don't want. He can furnish new beginners with green roses, tree strawberries, or peaches as large as a sugar bowl. This class of peddlers is getting to be very numerous, and something should be done to discourage them, as they injure all reputable nurserymen. Their entire stock in trade consists of a quantity of unsalable trees and plants bought at crash prices, and the ignorance of farmers who never read horticultural papers, nor attend horticultural meetings like this; if they did our peddlers' position would be gone.

It is claimed that the tree agent is the pioneer of the fruit business, as he has introduced fruit on a great many farms, where if he had not appeared it would never have been set, and I presume it is true; but he is no longer needed, and especially in this late stage region, as we are not amateurs but professional fruit-growers.

In conclusion, the inquiry suggests itself as to whether the tree peddler learned the tricks of the average fruit-grower, or the grower learned his tricks of the peddler. One sells fruit trees and plants that are a deception and a fraud, the other sells fruit which is not what it appears to be. The balance of trade seems to be in the peddler's favor.

favor, as he gets the largest prices for his goods, while the average grower gets the lowest price, the difference being in the shrewdness of the purchasers. Therefore let no man throw stones at the tree peddler, if his house be built of glass.

Mr. Morrill's paper was taken up and discussed.

A. Hamilton—I agree with the paper in relation to small or medium trees for transplanting. Apple trees should never be over three years old when transplanted; preferred good strong two year old trees, they have better roots, more in proportion to the top.

G. H. LaFleur—Agree with Mr. Hamilton; would prefer good strong well rooted two-year-old apple trees to any other age. Peaches one year from bud.

J. G. Ramsdell—I have had some experience with pears; a standard pear tree three or four years old, with good roots properly dug and transplanted, will generally make a good healthy tree. We want roots in proportion to the top.

J. N. Stearns—I cut back peach trees to a whip. Pear trees cut back all limbs to two or three buds. Apples nearly the same. Treated in this way they make better trees in the end.

J. B. Proctor—I concur in what Mr. Stearns has said in regard to cutting back young trees. If you have good roots you can grow good tops to your trees.

Geo. Griffin—I have planted some dwarf pear trees and found that after a few years they break off at the point of union between the pear stock and the quince.

A. Hamilton—Dwarf pears should be budded near the ground, and when transplanted in the orchard should be set deep—all the quince stock below the ground. It is better if we can have roots from the pear above the quince stock.

J. G. Ramsdell—There are only a small number of varieties of pear that make good dwarfs. The Duchess and Louise Bonne are two that work well on the quince. Large pears have been made from dwarf pear orchards where they have been properly handled. Dwarf pears require good culture and good soil; the last year's growth should be cut back every spring to within three or four buds of old wood; this should be repeated annually during the life of the tree. Cited an instance where this had been practiced for thirty years, and the trees are in fine condition and still bearing.

Prof. Bailey—I have seen the dwarf pear orchard referred to; it belongs to T. G. Yeomans, of Walworth, N. Y. If dwarf pear trees are cultivated properly, and cut back thoroughly, they make paying and long lived orchards. They need special management.

The committee made the following reports, which were unanimously adopted.

REPORT OF THE COMMITTEE ON FRUIT. Your committee on fruit found on the table 22 varieties of apples, contributed by W. B. Andrus, of Allegan, and two varieties by L. H. Bailey, of South Haven, all of which were in excellent condition. We also found two varieties of peaches, one contributed by W. B. Andrus, of Allegan, and one by S. W. Gebhardt, of Mears, to this Society, are an evidence that Oceana County will have a full crop of peaches and plums. Branches and twigs cut from trees and berry bushes near South Haven show a full crop of these fruits.

All of which is respectfully submitted. J. W. HUMPHREY, Chairman. M. T. SMITH, Secretary. A. HAMILTON, Committee.

ON THE DEATH OF MEMBERS OF THE SOCIETY. WHEREAS, By a mysterious Providence Harry J. and Frank R. Linderman have been taken from our midst; and

WHEREAS, We, the West Michigan Fruit-Growers' Society, now convened at South Haven, are deeply sensible of their absence and our own consequent loss; therefore, Resolved, That we hereby express to one another, to their bereaved kindred, and to the community, the sincere regard in which we held the recently departed members of our Society.

Resolved, That they will be long remembered as intelligent, energetic co-laborers, zealous supporters of this organization, and as friends and Christian gentlemen of this Society.

A. S. DYCKMAN, Chairman. J. N. STEARNS, Secretary. J. B. PROCTOR, Committee.

WHEREAS, We are profoundly moved by the dispensation of Providence which removed from earth our esteemed fellow-member, Harvey Campbell Sherwood, we, the West Michigan Fruit-Growers' Society, do Resolved, That the peculiar virtues, exalted manhood, and rare intelligence of our departed member make it our duty to this expression our high regard for him as a co-worker with us in the cause of pomology, and our appreciation of his merit as a man and citizen.

Resolved, That we profess to his bereaved wife and family our kindest sympathy, regretting that this means is wholly inadequate to express the degree of our feelings either toward them or for him they mourn. Resolved, That these resolutions be engraved upon our records and a copy thereof be supplied by our Secretary to those to whom we offer condolence. A. C. COLLIER, Chairman. R. MORRILL, Secretary. R. MORRILL, Committee.

RESOLUTIONS OF THANKS.

The committee on resolutions beg leave to report as follows:

The officers and members of the West Michigan Fruit-Growers' Society in convention assembled would tender their sincere thanks to the South Haven and Cass Pomological Society for their invitation and cordial reception of this Society in the village of South Haven; to the citizens of South Haven and vicinity for their generous hospitality in entertaining this Society's guests from abroad; to Miss Cora Moulton for the vocal music, and Miss Hill as organist; to the parties who furnished the fruit and flowers for decoration; to the parties furnishing specimen plants of the various kinds of fruit; and especially to Prof. Bailey, of Cornell University, for his charming talk on his European travels. Again the thanks to all the contributors to our pleasure and profit are tendered.

H. DALE ADAMS, Chairman. L. F. TAYLOR, Secretary. H. J. KINGSLLEY, Committee.

Capt. Geo. Huskinson, on behalf of the citizens of Allegan, invited the Society to hold its annual meeting in December next at Allegan. G. H. LaFleur said he wished to second the invitation given by Mr. Huskinson and hoped that the Society would accept the invitation to hold the next annual meeting at Allegan. The Society by vote accepted the invitation. J. W. Humphrey, chairman of the committee on entertainment, who had not for a moment neglected to look after the wants of those present, announced that dinner was in waiting, and after adjournment all repaired to Monroe Hall and partook of an excellent dinner.

G. H. LAFLEUR, Sec.

## The Melon Disease.

The fungus disease, about the true character of which so little is yet known, and which attacks cucumbers, melons, and squashes, has become so common and destructive all over the whole extent of the country, that the cultivation of vine fruits in many places is almost entirely abandoned. The attack appears to come suddenly and unexpectedly. The thrifty growing plant all at once begins to wilt, straightens up again at night or during the cloudy weather, but within a few days dies down and burns up. This generally happens on hot days, showing that the fungus in its needs and mode of propagation resembles the black-root fungus of the grape—a resemblance giving us the clue to the means of fighting it.

The disease has often been confounded with the work of a squash borer or other insects. The most superficial examination of the root could hardly fail to reveal the cause when the borer is destroying the plant, and the evil consequences in that case may often be averted by covering the first joints of the running vines with soil in order to induce them to strike root there, and make the plant independent of the original root. The fungus attacks the leaves first, and kills the part above ground, while leaving the root intact.

Someone now comes with an infallible remedy; covering the vines with elderberry leaves or twigs. The elderberry as such would not harm a flea. And yet it is not at all unlikely that the discoverer of this new preventive measure has been entirely successful in saving his plants, not especially by anything characteristic to the elderberry but by the mechanical protection of providing a cover. It will be remembered that the grape vines growing under a coping are exempt from root attacks, and that even the slightest covering or protection above greatly prevents all danger, or at least lessens the amount of injury. We are quite sure that the melon disease presents an analogous case, for we have never learned of a single case of vines under glass having been attacked by the fungus. Any covering, no doubt, will prove a preventive, elderberry leaves as well as other leaves, or boards, cloths, etc.

Our own experience with remedies and preventives has given us results upon which definite and final conclusions might be based. It has seemed to us, however, that the free application of copperas or saltpetre water to the soil around the plants has lessened the attacks, without giving us entire exemption. We have found, also, that sulphate of copper in any form is not a remedy, but if effectual, must be used as a preventive, in some way as it is used for mildew and rot of grapes. The specialist of the Department of Agriculture, who during the past season has visited the localities along the Atlantic coast, where the disease seems to be most epidemic, he believes, has come to similar conclusions. We hope that our readers living where the disease is a common annual occurrence, will give the copper remedies, especially the Bordeaux mixture, a thorough trial, and report results. But this is a preventive only, and should be applied before the vines are attacked.—Popular Gardening.

## Girdled Grape Vines.

Mr. E. Williams, of Montclair, N. J., says, in Popular Gardening:

You ask me for what purpose, if any, can ringing or girdling of grape vines be recommended? Answer: for the gratifying of one's curiosity and vanity, and perpetrating a fraud. When and how should it be done? Answer: After the fruit has arrived at the standstill during the formation of seed. It is done by removing a section of bark from the bearing or fruiting cane, for one-half to one inch in length below the clusters to be affected, i. e., between them and the trunk of the vine. If the section removed is less than one-half an inch, new bark will sometimes bridge over the chasm, and thus defeat the object in view. A wire or stout cord wound tightly around the cane will sometimes have the same effect. I have seen canes bent over a wire till the weight of the cane and fruit beyond had gradually broken the tissues of the wood and compressed them so tightly as to entirely obstruct the flow of sap, which answers the same purpose as girdling. The effect is obvious. The sap ascends as usual but its return flow is stopped at the girdled point. Here it accumulates, backs up, and finds its way to clusters in the immediate vicinity. As a consequence they get and have to provide for a larger share than they otherwise would.

Owing to this excess of sap the fruit becomes greatly enlarged; it is forced to color and ripen earlier, but its quality is much impaired. The flavor is deficient and the juice thin and watery. While in New York two years ago a commission merchant called my attention to some remarkably fine Delaware grapes. They were certainly fine in appearance but the merchant added: "They are good for nothing; they have no flavor." As it was early in the season for Delaware to ripen normally in the region from whence they came, I suggested that probably the vines had been girdled in order to get them in early. This was afterward verified. I explained to him the effects of the process and the object sought, which he denounced more emphatically than politely, and which the grower, could he have heard them, would have been at no loss to understand. I wish he could have witnessed the chagrin and mortification of the merchant when a customer, after tasting a sample of the superb looking fruit, spit it out, turned on his heel and walked away in disgust. No reputable merchant desires to handle such fruit, or to deceive his customers with it, and no honest fruit grower will practice such fraud. I am sorry to admit, however, that this dishonest practice prevails to a large extent among grape-growers, and quantities of their products find their way to the New York markets to compete for the early market, with the unripe fruit from other sections, disappointing the purchasers, depressing the prices, and destroying public confidence, and demand for the fully matured and well product of more honest growers. A few inquiries by the city boards of health of such consignments would have a salutary and beneficial effect and teach the shippers a lesson they would remember.

The after effect on the vine is not detrimental, as those who practice the fraud generally know enough to remove the wood

operated upon, and retain enough in its natural condition for future fruitfulness.

Should fruit thus grown be placed on exhibit in competition with other grapes? Most emphatically no! It is sometimes attempted, but judges who know their business pass it over with contempt. Some horticultural societies forbid such exhibits in their rules and regulations, and all should. Such fruit is superior in size and beauty and very attractive to the eye, and if appearance only were the deciding point it would win, but such deceptive frauds should not be allowed to compete with honestly and naturally grown fruit. Putting a premium on dishonesty tends to impede and discourage honest and fair competition.

## Changing the Bearing Year.

In my travels about the State I came across a book about agriculture and fruit culture, published nearly a hundred years ago, which contained a full discussion of the question of changing the bearing year of fruit trees by various processes. They had the habit then of bearing alternate years, and some of them have kept it up ever since. Some few years ago a hail storm came across my farm and very seriously damaged my crop of fruit and my crops generally during the midsummer, so that my apples were of no value that year and very small in quantity. The result was that the bearing year of my trees was changed. The disposition of my orchard and most of the orchards about me had been to bear excessive crops one year, and then have a year to rest. That disposition has been very much modified by the interruption that was caused by the hail storm to which I referred. Since then the fruit has generally been well distributed on the branches, at few times has the quality of fruit been injured by an excessive attempt at bearing, and almost every year I have had a fair amount of fruit; so that hail storm, which temporarily did me so much harm has really been a blessing. I did not understand it at the time, but I have had my pay back more than once in the even distribution of the fruit crop.—Secretary Gold, of the Connecticut Board of Agriculture.

## The Influence of Sunlight on Trees.

In the latest report of the head of the Forestry Department of the United States reference is made to the effect of light on the growth of various trees. It is well known, says Prof. Fernow, that light is necessary for the development of chlorophyll, and, therefore, for the life of all green plants, and especially for that of trees. The heat alone which accompanies the light is not sufficient, although the relative influence of the light and the heat on the growth is still an open question, as well as the relative requirements in light of different species of trees. In the case of forest trees, which in forestry serve as an indication of the amount of shade which the trees exert, and with that their capacity of impeding evaporation, some require full sunlight for their development, others are averse to a high degree of light. To this must be due the change in the plants of a district when its forests are removed. Then the amount of light or shade needed is modified by site. Where the sunlight is strong, in higher altitudes, drier climates, or where the growing season is longer, or there are more sunny days, some species will endure more shade. The flora of high altitudes in general requires light. Trees always develop best, in other words make most wood, in the full enjoyment of light, but their capacity of development under shade varies greatly. The yew will thrive in the densest shade, while a few years overtopping kills the larch; the beech will grow with considerable energy under partial shade, where the oak would only just keep alive and the birch would die. When planted in moist places all species are less sensitive to the withdrawal of light. In the open—maples, elms, sycamores, and others grow well and make good shade trees, in a dense forest they thin out and have but scanty foliage. Conifers, such as spruces and firs, which preserve the foliage of several years, have perhaps the greatest capacity of growing under shade, and preserving their foliage in spite of the withdrawal of light. In America sufficient data to group the forest trees according to the amount of light required by them have not yet been collected, but rules based on experience have long been formed in Germany, where the behavior of trees under different conditions of light has been carefully studied. It has been found for instance, that on the same branch those leaves which are developed under the full influence of sunlight are not only larger and often tougher in texture, and thicker, but that they have a larger number of stomata or breathing pores than those less exposed to light. The whole subject is one of the utmost importance in forestry, and observations and experiments are to be carried out in regard to it in the United States.

## Horticultural Items.

In spraying trees with Paris green or London purple in solution, the finer the spray from the nozzle the less danger of harm to the foliage.

ORANGES from Mexico promise to compete with the Florida product. Kansas City received fifteen carloads of Mexican oranges this season.

The total production of wine in the world in 1888, was 3,616,761,153 gallons. Germany is excluded from this report, no returns having been received.

It costs \$1.25 per cwt. to send fresh fruit by freight from California to Chicago, and exactly double that sum by car attached to passenger train.

CHOPPED straw is an excellent mulch for strawberries, &c., and the chopping obviates the difficulty usually experienced in plowing under a mulch of long straw.

The Jones Fruit Grader, as pictured by a western exchange, seems to be a sort of "pigs in the clover" puzzle; but is said to do very efficient and rapid service in the orchard.

ANOTHER chestnut—It is a matter of surprise to the R. N. Y. that so little is said, so little known, of the beauty of the Double

White-flowering horse-chestnut.—Rural New Yorker.

The California Fruit-Grower estimates the raisin output of that State for 1889 at 1,500,000 boxes. About 10,000 acres were planted to raisin varieties of grapes in the planting season of 1888 and '89; the crop from this acreage will not come on the market until 1894.

The Allegan Gazette says H. Hutchins, of Gaines, last fall purchased thirty thousand peach baskets in which to market this year's crop of peaches. It was a case of "counting chickens before they hatched," for Mr. Hutchins has no peaches this year, although some years he has sold \$10,000 worth.

Mr. Prince, who told the Grand River Valley Horticultural Society that the Paris green which his neighbors used on their orchards had killed a great quantity of his bees, reports that after a day or two many of the apparently dead bees revived. Still, his loss was considerable.

The imported Australian lady-bird (*Volatella Corvina*) is reported as doing remarkable work in Los Angeles County, California, in destroying the scale bug and its eggs. Growers look forward to the extermination of the pest. It is to be hoped that when the scale insects are destroyed the lady-birds will not develop any mischievous inclinations such as have characterized the English sparrow.

An Illinois horticulturist banks up his raspberry plants with earth, in the blossoming season, saying to do so not only sustains the plants in an upright position, but also obviates in a measure the effects of the drought. He takes the earth from the middle of the rows, and applies it solidly about four inches deep among the canes. The best fertilizer for the raspberry, he says, is clean cultivation on good soil. A plantation of red raspberries will outlast one of blackcaps and prove more profitable during a series of years.

## Apianian.

SOME beekeepers report more trouble with the care of their bees in the spring than through the winter. It is an art to manage so as to have plenty of bees when the honey flow is most profuse.

SPRING dwindling, according to Allen Pringle, is merely the more or less rapid death of worker bees in the spring until there are not enough left to keep the hive. He thinks it is not a disease, but usually a purely natural exit of worn-out bees by death.

The *Apis dorsata*, or great bee of Java, suspends its combs from the under side of branches of trees, where they look like huge wens. The natives climb the lofty trees by the means of bamboo ladders, and feast on the honey and young bees, which they esteem a great delicacy.

A CORRESPONDENT of the *American Bee Journal*, who writes from Barry, Ill., says a neighbor sprayed his 100 acres of apple orchard in full bloom, with Paris green, and the result is ten or twelve beekeepers have been ruined so far as a spring crop of honey is concerned, by the effects of the poisoned bloom upon the bees.

O. L. HERSHUSER says there is no objection to feeding maple sugar to bees. He does not say it is the best food, but is confident it is good. He feeds it in this way: Take a thin cake of the desired amount of sugar, raise the cloth covering the bees, and place the cake over the cluster. It is but a moment's work, and practically no heat is lost. The bees will store it slowly, and thus stimulate the queen to lay. Enough may be given at one time to last the season during which it is desired to feed.

Mrs. HARRISON objects to stimulative feeding in early spring, saying: "Localities may differ in this respect, as in many other things, but I am convinced, by repeated trials, that it is a decided injury here. It excites bees to activity, and they will fly out in inclement weather, in search of water and mineral salts, and perish, and their death prove a serious loss to the colony, at a time when their services were most needed. More young bees may be reared, but at a time when their services are not worth so much to the commonwealth as the old ones are."

BEES fill themselves with honey before they begin to swarm. A bee journal says: "This is one of the wise provisions of nature. It gives them a start in their new home, and sustains them until they can get 'organized' and at work once more. But this is not all; the main secret of why bees can be so easily manipulated when swarming lies right here. This is why we can shake them into baskets, and pour them out in front of the hive without their raising a disturbance in our 'har.' In other words, a 'full stomach' has the same effect on a bee that it does on a man—it makes 'em good natured!'"

G. M. DOOLITTLE has made some observations which go to show that the idea a bee dies after losing its sting, is a fallacy. Mr. Doolittle says, after giving an account of what he has noticed: That it was not the design of nature for the bee to always lose its sting when defending its hive, is manifest where bees repel robbers to the extent of hundreds and thousands of slaughtered ones, when in such cases not one bee in one thousand loses its sting, but keeps it so that it can slaughter bee after bee till the attacking party is repelled, or they lose their lives in the combat. At times they do lose their stings in other bees, but not often.

Nothing Succeeds Like Success.

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## NEW ADVERTISEMENTS.

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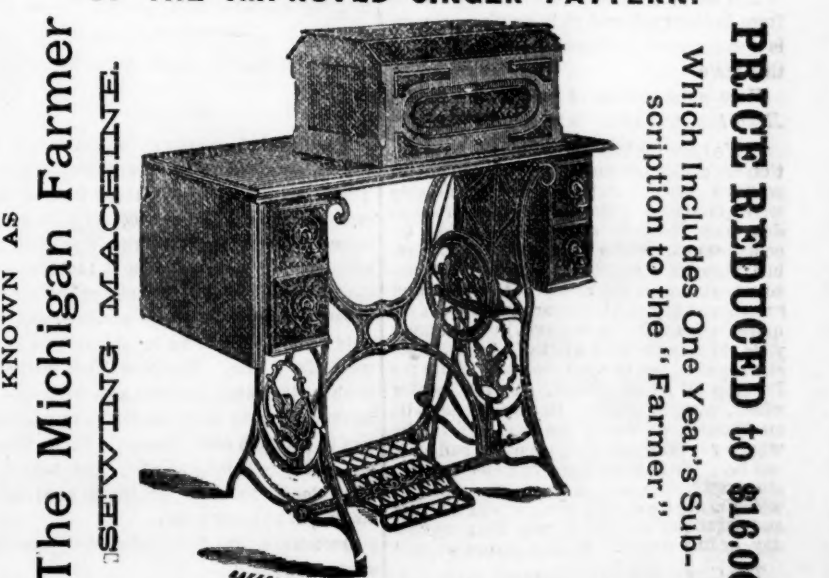
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—AT—  
**ONE-THIRD PRICE!!**  
THE NEW AND  
GREATLY IMPROVED  
**HIGH-ARM SINGER**



**HIGH-ARM IMPROVED SINGER.**  
With each of these machines we furnish one Kutter, one Tucker, one set Hemmers, one Foot Hemmer, one Sew Driver, one Wrench, one Oil Can and Oil, one Gauge, one Six Thumb-Screw, one extra Throat-Plate, one extra Check-Spring, one paper Needles, six Bobbins, and one Instruction Book. These articles are all included in the price named.  
Bear in mind that these machines are thoroughly made and of first-class workmanship, and  
**EVERY MACHINE WARRANTED FOR FIVE YEARS.**  
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DETROIT, SATURDAY, JUNE 22, 1889.

This Paper is Entered at the Detroit Post-

Office as second class matter.

WHEAT.

The receipts of wheat in this market

the past week amounted to 28,804 bu., against

54,568 bu. the previous week, and 25,290

bu. for corresponding week in 1888. Ship-

ments for the week were 39,036 bu., against

50,800 bu. the previous week, and 48,291

bu. the corresponding week last year. The

stocks of wheat now held in this city

amount to 38,884 bu., against 48,165

bu. last week, and 25,592 bu. at the cor-

responding date in 1888. The visible supply

of this grain on June 15 was 17,631,294 bu.,

against 18,924,181 bu. the previous week, and

25,240,800 bu. for the corresponding week in

1888. This shows a decrease from the

amount reported the previous week of 1,360,-

000 bushels. As compared with a year ago

the visible supply shows a decrease of 7,-

609,515 bu.

The market changes with every change in

the weather. Reports of heavy rains in the

Southern States where the harvest is in pro-

gress, start prices up, and contrary reports

send them down again. Upon the whole

the market is rather firmer, the less prom-

ising outlook for the new crop in the winter

wheat States, with reports of poor prospects

of wheat "in sight" at the dates named, in

the United States, Canada, and on passage

to Great Britain and the Continent of Eu-

rope:

Visible supply..... 30,300,816

On passage for United Kingdom..... 12,738,000

On passage for Continent of Europe..... 2,336,000

Total bushels June 1, 1889..... 35,374,816

Total previous week..... 37,300,385

Total two weeks ago..... 38,318,000

Total June 1, 1888..... 39,834,228

The estimated receipts of foreign and

home-grown wheat in the English markets

for the week ending June 8 were 1,042,340

bu. less than the estimated

consumption; and for the eight weeks end-

ing May 25 the receipts are estimated to

have been 1,195,140 bu. over the con-

sumption. The receipts show an increase

for these eight weeks of 5,918,528 bu. as

compared with the corresponding eight

weeks in 1888.

Shipments of wheat from India for the

week ending June 8, 1889, as per special

cable to the New York Produce Exchange,

aggregated 260,000 bu., of which 160,000

bu. were for the United Kingdom and

100,000 for the Continent. The shipments

for the previous week, as cable, amounted

to 460,000 bushels, of which 230,000 went

to the United Kingdom, and 440,000 to the

Continent. The shipments from that coun-

try from April 1, the beginning of the crop

year, to June 8, aggregated 5,400,000 bu.,

of which 3,920,000 bu. went to the United

Kingdom, and 2,380,000 bu. to the Con-

tinent. For the corresponding period in 1888

the shipments were 9,500,000 bu. The

wheat on passage from India May 21 was

estimated at 2,584,000 bu. One year ago

the quantity was 4,192,000 bu.

The Liverpool market on Friday was

quoted firm, with values higher. Quota-

tions for American wheat were as follows: No. 2

winter, 6s. 5½d. @ 6d. per cental; No. 2

spring, 7s. 9½d. @ 7s. 1½d.; California No. 1

6s. 9½d. @ 6s. 10½d.

CORN AND OATS.

CORN.

The receipts of corn in this market

the past week were 7,067 bu., against 9,280

bu. the previous week, and 12,790 bu. for

the corresponding week in 1888. Shipments

for the week were 24,834, against none

the previous week, and 6,979 bu. for the

corresponding week in 1888. The visible

supply of corn in the country on June 15

amounted to 11,217,000 bu., against 12,020,-

237 bu. the previous week, and 12,448,543 bu.

at the same date in 1888. The visible

supply shows a decrease during the week

indicated of 613,000 bu. The stocks now held

in this city amount to 39,564 bu. against

40,643 bu. last week, and 37,000 bu. at the

corresponding date in 1888. There is a

roughing note to note in corn. Values are

about the same as a week ago, and firm, but

the demand is light. No. 2 is quoted at 34½c

per bu., No. 3 at 33c, and No. 2 white and

yellow both at 35c. Nothing doing in

futures. The prospects for even a fair

crop in this State are not brilliant; but a

favorable fall may finish it up. At Chicago

corn is quoted easy at a slight advance since

a week ago. Spot No. 2 is quoted there at

34½c, July futures at 34½c, August at

35½c, and September at 35½c per bu.

The Liverpool market yesterday was

quoted firm with fair demand. New mixed

western, 3s. 9d. per cental. In futures No. 2

June sold at 3s. 9d., July at 3s. 9d., and

August at 3s. 9½d.

OATS.

The receipts at this point for the week

were 38,845 bu., against 39,965 bu. the

previous week, and 31,845 bu. for the cor-

responding week last year. The shipments

for the week were 1,009 bu., against 1,288 bu.

the previous week, and 950 bu. for same week

in 1888. The visible supply of this grain

on June 15th was 5,514,000 bu., against

6,333,310 bu. the previous week and 5,767,-

000 at the corresponding date in 1888. The

visible supply shows a decrease of 820,000

bu. for the week indicated. Stocks held in

store here amount to 11,935 bu., against

21,003 bu. the previous week, and 33,592

the corresponding week in 1888. Oats are

higher than a week ago, and the market

more active. No. 2 white are selling at

39½c, light mixed at 37½c, and No. 2

mixed at 35½c per bu. There has also

been a slight advance at Chicago. No. 2

mixed spot are quoted at 22½c per bu.,

July delivery at 22½c, and August delivery

at 23½c, closing steady. The New York

market is stronger and fairly active, with

futures higher and spot unchanged. Quota-

tions yesterday were as follows: No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

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white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

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white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

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white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

white, 34c; mixed western, 27½c; No. 2

"SHEEP MEN, TAKE WARNING."

Some two or three years since I contrib-

uted to the columns of the MICHIGAN FARMER

an article under the foregoing head,

and I would now repeat the warning with

increased emphasis. My principal reason

for doing this is what I consider the im-

pending danger to our sheep industry from

the persistent effort of a few breeders to

get up a "boom" in the interest of the

Shropshire sheep. Let me premise by

stating that I have no quarrel with the

Shropshire sheep. I fully endorse the as-

sertion of Mr. Button in a recent issue of

the FARMER, that "there is plenty of room

for both the breeders of Shropshires and

Merinos." They are two distinct and very

different breeds of sheep; and should each

be bred separately, and bred with distinct

reference to that purpose for which nature

has designed them—the one for wool and

the other for mutton. The warning which I

desire to enforce in this article is directed

against the mixing and mingling of the blood

of the two races, so widely different in their

nature. It is just as necessary that the

world be fed as clothed, and vice versa, and

while the prime object of the breeders of the

Merino sheep should be to clothe the world,

the prime object of the breeder of the Shrop-

shire should be to feed the world, and in the

end should the objects be lost sight of.

So long as these objects are kept in view

there will be no rivalry and should be no

jealousy between the two classes of breed-

ers. But knowing how natural and easy it

is for feelings of rivalry to spring up in the

human mind, I desire here to caution the

Merino breeders against the folly of attempt-

ing to rival the Shropshire as a mutton

sheep; and I would with equal emphasis

caution the Shropshire breeders against the

hopeless attempt to rival the Merinos in the

production of wool.

I speak from a disinterested standpoint,

as I am in no sense a speculator in pedigrees

or blood, and generally purchase my bucks

from others, preferring to keep an average

farmer's flock, such as any farmer may keep

without extra care or expense, and always

keeping the weight of my fleeces just below

the "docking" line.

Dismissing my Shropshire friends with

my best wishes for their success in the

breeding of mutton sheep, I now desire to

address myself pointedly to the Merino

breeders of the State. You have in your

hands an important trust, and upon you

rests a deep responsibility. Great credit is

due to the breeders of the American Merino

sheep, and in no States of the American

Union have their efforts been crowned with

such eminent success as in Vermont, New

York and Michigan. So far as I view the

subject it would be injudicious assumption

for either of these three States to assume

superiority over the others, for in all these

States are to be found the very best sheep,

not only of our own country but of the

whole inhabited world.















(Continued from First Page.)

## VITAL PARTS COMPARED.

Comparing the proportions in the two series, we see that among the organs and parts concerned in the vital functions, with the exception of the spleen and kidneys, the advantage was always in favor of the short-bran series. They had more blood in proportion to a given weight of carcass, larger hearts, lungs, livers, etc., and it is to be expected greater stamina and vitality. Further examination, however, shows that this advantage of the short-bran lot was in nearly every instance exceedingly small.

Setting aside for the moment the exceptional cases of the spleen and kidneys, which alone among the vital organs examined show a gain for the corn-fed lot, the gain in the case of the kidneys certainly is susceptible of explanation other than that of difference in food used, it seems plainly the rule, as shown in the experiments of Professors Sanborn and Henry, that the pigs receiving the nitrogenous diet did make more blood and a larger development of the vital organs in proportion to dressed carcass than those getting the carbonaceous foods. The explanation of this apparent rule in the case of the experiment under examination seems to me clear enough; the corn-fed lot made a gain of nine and forty-hundredths (9.44) pounds per hundred-weight over (above) that made by the short-bran-fed; in other words, the commercially almost valueless blood and internal organs of each corn-fed pig have been compared with nearly nine and one-half (9.44) per cent more of salable carcass than was used as the standard of comparison with the lot fed short-bran. The fact that the corn-fed pigs had in the average greater weight of tongue, heart, lungs, kidney, liver and spleen than those fed short-bran, simply shows that the corn-fed pigs gained even in the vital organs more than the short-bran-fed series (it can hardly be supposed that the latter lost during the fattening period in the weight of their internal organs) while gaining much more in weight of carcass than their competitors. All this is clearly in line with the familiar dictum of Sir John B. Lawes, that as the fattening process goes on "the carcass parts, or salable meat, increase more rapidly than the internal parts, or offal."

APPEARANT DISCREPANCIES EXPLAINED. I have already referred to the fact that the short-bran-fed lot consumed with their food greatly more of water than those fed corn. Without doubt this surplusage of water had its effect upon all the internal parts, but particularly on the weight of blood and kidneys. Several of the pigs exhibited unmistakable signs of disease in one or more of their internal organs.

STRENGTH OF BONES. Much stress has been laid upon the need of stronger bones in the improved breeds of swine, and the claim has been freely put forth, that by feeding nitrogenous foods there would inevitably accrue a great increase in the strength of the bones of animals thus fed, over the corresponding bones of those fed on corn. Without stopping to argue the question of the need of an increase of bone or other offal beyond that actually required to support the pork packing machine—which seems to me to be at least questionable—I desire to present the facts in this regard as shown in our experiment. The reader will remember that both sets of pigs used in this trial had constantly before them a mixture of lime, wood ashes and salt, which was partaken of freely by all the pigs.

The bones were tested for strength and toughness by Prof. O. P. Hood, of the Department of Mechanics and Engineering, who constructed an ingenious machine for this purpose. Subjoined is Mr. Hood's report of results obtained with bones of every animal in the experiment:

Prof. E. M. SHELTON: The bones submitted to me for test were placed centrally on two rounded supports four inches apart, and loaded midway between the supports. The flesh had been removed from the bones by scraping, so that they were in their natural condition when broken.

The breaking-weight of each bone is in the accompanying table:

Bones.	Breaking weight of bones.									
	1	2	3	4	5	6	7	8	9	10
Left femur	100	100	100	100	100	100	100	100	100	100
Right femur	100	100	100	100	100	100	100	100	100	100
Left tibia	100	100	100	100	100	100	100	100	100	100
Right tibia	100	100	100	100	100	100	100	100	100	100
Left humerus	100	100	100	100	100	100	100	100	100	100
Right humerus	100	100	100	100	100	100	100	100	100	100
Left radius	100	100	100	100	100	100	100	100	100	100
Right radius	100	100	100	100	100	100	100	100	100	100
Left ulna	100	100	100	100	100	100	100	100	100	100
Right ulna	100	100	100	100	100	100	100	100	100	100

The breaking of each of Nos. 6, 7, 8, 9 and 10 (corn-fed) was preceded by cracking along the under side when loaded to about two-thirds its ultimate load. So regular was this indication that the near approach to the breaking-point could always be told.

The breaking of Nos. 1, 2, 3, 4 and 5 (short-bran series) was preceded by no indications whatever, but broke off suddenly under a rather limited deflection compared to Nos. 6, 7, 8, 9 and 10. The appearance of the fracture was in each case characteristic, although not in so marked a degree as the breaking characteristics. Nos. 1, 2, 3, 4 and 5 broke mostly with a clean, smooth fracture, lines drawn across the fractured surface being generally square across the bone. There was but little separation of concentric layers of bony material, and the absence of splinters was noticeable. The fracture indicates a more granular and less fibrous character. Nos. 6, 7, 8, 9 and 10 broke with a very irregular, flinty fracture, the fractured surface showing sharp, irregular splinters. The fracture indicates a much harder bone, and the greater deflection of these bones indicates greater toughness.

O. P. HOOD, Superintendent.

In the case of three of the pairs of pigs compared, the corn-fed pig had the strongest bones and the largest per cent of strength to the live-weight of live pig, and we have the testimony of Mr. Hood—who by the way knew nothing of the special treatment accorded the two sets of pigs—to the fact that the bones of the corn-fed series were tougher and more fibrous than those of the short-bran-fed pigs. I may add that the average force required to fracture each of the bones of the

corn-fed lot was 34 4-10 pounds greater than was required to perform a like service for the short-bran series.

## CHARACTER OF THE MEAT.

The character of the flesh of the two series is faithfully shown in the Bulletin by engravings, which are literal copies of photographs of like sections of every pig employed in the experiment. It seems unnecessary, says the Professor, to add one word to the testimony of the photographs, except to state these pork sections were examined by a large number of people, teachers and students of the College, and others, who for the most part knew nothing of the antecedents of the pigs, and while in a few individual cases opinions differed as to the amount of lean meat in the two series, the general consensus of opinion was that neither in color of flesh, marbling, or amount of lean meat was there any sensible difference in flesh of the two lots. The amount of fat, however, was often noticeably greater in the case of the individual of the corn-fed series than with the corresponding pig of the other series.

## THE COOKING TEST.

The cooking qualities of the flesh of the two series was very thoroughly tested in frying, roasting and boiling. The frying test was not altogether satisfactory, as only lean cuts of ham were employed. Although the meat of the two series was tested in this way by at least a dozen competent judges of meats, not one was able to detect any difference in the meat of the two sets in favor of any largely appreciable by the senses.

Two large loin roasts were taken, one from pig No. 5 short-bran-series, and another from No. 9 corn-fed-series. These were freed almost entirely from fat by trimming in the usual manner. They were cooked under precisely similar conditions by Mrs. N. S. Kadzie, Professor of Household Economy, and served at one of the Friday afternoon lunches to a considerable number of Professors and students. The unanimous testimony of those who partook of those roasts was that roast "No. 9" was of a much finer texture than "No. 5," and that it was noticeably harder to the teeth than No. 9. On the other hand, No. 9 was distinctly more greasy and of "better grain" than No. 5. Whether this difference in the character of the meat of the roasts was due to individual traits, or to the food of which the meat was made, or to both combined, is a matter which I leave wholly to the judgment of the reader.

An exceedingly interesting boiling test was made with two samples of the short-bran-fed pig No. 5, and two from the corn-fed No. 9, the samples having been salted in strong brine three months. In the case of both pigs boiling pieces of suitable size were cut from the middle dorsal region. From all of the pieces the muscular portions were trimmed to an equal extent, leaving solid masses of "fat pork" about five inches in thickness. The pork in the case of both trials was placed in cold water, which was rapidly brought to the boiling point, at which temperature it was held for three hours. In the first trial the two pieces compared were boiled in the same pot; in the second the pieces were cooked in separate vessels. In the first boiling the corn-fed was "wasted in the pot," "boiled away" exactly 33 1/3 per cent, and that from the short-bran-fed pig 47 1/2 per cent, by weight. In the second boiling the shrinkage of the corn-fed and short-bran-fed were respectively 33 1/3 per cent, and 50 per cent. Moreover, there was a noticeable difference in the character of the meat after the boiling. The corn-fed pieces retained their original forms; they were firm and elastic under moderate pressure, offering considerable resistance to the progress of knife or fork. On the other hand, the short-bran-fed pork was a soft, spongy and almost shapeless mass after cooking.

It seems proper, in conclusion, to refer to the general character of the meat of these experimental pigs. The pigs were very fat, and consequently open to all of the objections which have been almost vehemently urged against the "mere cylinders of fat," and "masses of blubber" which it is alleged the well-bred and well-fed American pig has come to be. Despite these theoretical objections to fattness, our pork was in great request by neighboring families and local butchers before we were ready to place it on the market. The carcasses were finally sold mostly to the butcher; and the gross sum realized from the sale, after the considerable amounts of meat necessarily used up in the course of the experiment had been deducted, was considerably greater than the pigs would have fetched had they been marketed as is customary hereabouts, on foot.

The truth is, the great American staple, Indian corn, is an incomparable grain food when used simply for fattening, or when judiciously blended with other foods in the process of growth and development of the animal. But it is when we consider the cheapness and ease with which Indian corn is produced, due to its perfect suitability to American soil and climate, that its superiority to all other forms of grain food becomes strikingly apparent. Thus a single acre yielding the quite ordinary product of 50 bushels of corn, would, according to the facts of this experiment, produce 513 pounds of pork. Moreover, in the case of the chief portion of the agricultural sections of the American continent, there is no other grain that is really available for meat-making. It is futile to talk of using grain, shorts, barley, oats, milk or peas, in pork-making, upon a large scale. The instant that we are reduced to the necessity of using any or all of these foods as a substitute for Indian corn, our supremacy as a pork-producing nation will have passed to others.

The objection often urged against the general fattness of corn-fed pigs seems to me to have no sufficient foundation in the wants of consumers. It is true that towns-people generally demand lean fresh meat, but work-people, who are the chief consumers of pork the world over, demand fat meat, and of the salted article will take no other; while for which they cheerfully pay a price such that the fat portions of the hog before "rendering" are more profitable to the butcher than the lean parts of the carcass.

The results of our feeding of fully matured pigs in equal sets upon short-bran and corn meal during a limited forcing or fattening period may be briefly summed up as follows:

1. The short-bran-fed pigs required for full ripening nearly or quite twenty-five per

cent. more of time than was needed by the corn-fed series; but even when the feeding of the corn-fed lot was prolonged—to their great disadvantage—to a period equal to that occupied by the short-bran-fed series it cost to make a hundred-weight of gain from short-bran twenty-five (25) cents more than was needed to make a like gain with corn meal alone.

2. The corn diet, as compared with short-bran, had no unfavorable influence upon the vital organs, so-called, with the exception of the kidneys. The testimony upon this latter point, however, is far from conclusive.

3. The corn-fed pigs had stronger bones than those fed short-bran, and the quality of the bone tissue was distinctly tougher and more fibrous.

4. The meat of the pigs fed corn was fatter than that made from short-bran, and a fact fully explained by their excess of gain, (98 lbs.), but the advantage of either series in respect to the amount of lean, or in its distribution with the fat (marbling) was not distinguishable by the senses.

5. The quality of the meat, as a whole, of the corn-fed pigs was clearly better than that of the short-bran series, for cooking by boiling; the results obtained from roasting lean meat gave occasion for a difference of opinion as to superiority in the quality of the meat of the two sets, while frying failed to show any advantage for either.

The exports of butter from New York since May 1st, the beginning of the trade year, compare as follows:

For week ending June 17, 1889, 408,241 lbs.

Same week 1888, 408,241 lbs.

Same time last year, 408,241 lbs.

Same time last year, 408,241 lbs.

Same time last year, 408,241 lbs.

Same time last year, 408,241 lbs.

Same time last year, 408,241 lbs.

Same time last year, 408,241 lbs.

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## Commercial.

## DETROIT WHOLESALE MARKET.

DETROIT, June 21, 1889.

**FLOUR**—Market quiet at about the same range of prices as last week. Quotations on car-load lots are as follows:

Michigan roller process..... 2 00 @ 4 00  
 Minnesota, bakers..... 2 00 @ 4 00  
 Minnesota, bakers..... 2 00 @ 4 00  
 Minnesota, bakers..... 2 00 @ 4 00  
 Minnesota, bakers..... 2 00 @ 4 00  
 Minnesota, bakers..... 2 00 @ 4 00

**WHEAT**—Spot wheat is higher than a week ago, and late futures slightly lower. It is held so far for a time. Closing quotations yesterday were as follows: No. 1 white, 85¢; No. 2 red, 84¢; No. 3 red, 75¢; rejected red, 50¢. In futures, No. 2 red for June closed at 84¢, July at 78¢, August at 77¢, and September at 75¢.

**CORN**—Market unchanged. No. 2 quoted at 34¢, and No. 3 at 33¢. No. 2 yellow and No. 3 white quoted at 36¢ bu.

**OATS**—Higher than a week ago. Quoted at 25¢ for No. 2 white, 27¢ for light mixed, and 28¢ for No. 2 mixed.

**BARLEY**—The range is 90¢ to 110¢ per cental. Market steady. Receipts for the week, 3,200 bu.; last week, 6,500; shipments, 243 bu. Stocks in store, 285 bu.; last week, 243 bu.; last year, 559 bu.

**RYE**—Market higher. Quoted at 47¢ bu. for No. 2.

**CLAYTON SEED**—Market higher. Prime quoted at \$4 50 to \$5 00 bu. for October delivery.

**BUTTER**—Dull and weak. The range for good to choice dairy is 11¢ to 12¢ bu., and for creamery 14¢ to 15¢ bu. Receipts are heavy.

**CHEESE**—Quoted at 82¢ for new. Old, 11¢ to 12¢ bu. Market quiet.

**EGGS**—The market is steady at 12¢ to 13¢ for fresh receipts. Receipts and demand about even.

**DRY BEANS**—Steady at 25¢ to 30¢ bu., as to quality.